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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,873	03/31/2004	Michael P. Remington JR.	1-16149	7863

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EXAMINER	
LAFOND, RONALD D	
ART UNIT	PAPER NUMBER
1709	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,873	REMINGTON, MICHAEL P.	
	Examiner	Art Unit	
	Ronald D. Lafond	1709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *9-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/31/2004, 06/28/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1 – 8 and 13, drawn to a method for depositing silica on glass, classified in class 427, subclass 255.38.

II. Claims 9 – 12, drawn to a coated article, classified in class 428, subclass 428.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process, for example by using a different accelerant, such as triethylphosphite.

3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mark Hixon on April 12, 2007, a provisional election was made without traverse to prosecute the invention of Group I, Claims 1 – 8 and 13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9 – 12 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ye (United States Patent 6,106,892), and further in view of Neuman, et al (United States Patent 5,599,387, hereafter Neuman).

7. Ye teaches, as in Claim 1 of this application, a process for depositing a silica coating upon a heated glass substrate, comprising: a) providing a heated glass substrate having a surface upon which the coating is to be deposited (see Claim 1 of Ye); and b) directing a precursor mixture comprising a silane and a phosphorous compound toward and along the surface to be coated, and reacting the mixture at or near the surface to form a silica coating on the surface of the glass substrate (see again claim 1 of Ye). Ye also teaches that the precursor mixture further comprises an oxygen source (see Column 2, lines 46 – 49 of Ye), a radical scavenger (see again Column 2, lines 46 – 49 of Ye; applicant discloses and claims that ethylene is a radical scavenger), and an inert carrier gas (see Column 3, lines 7 – 8, and Table 1 of Ye).

8. Ye does not teach that the phosphorous compound is a phosphorous (V) compound. Ye states, in Column 3, lines 8 – 10, that "Where used, the accelerant, a phosphite ... ester, was injected into the heated gaseous mixture ..." The accelerant used by Ye, according to Table 1, is triethylphosphite (TEP). Therefore, it is clear from the language of the Specification that the phosphorous compound (phosphorous ester) claimed by Ye in Claim 1 is an accelerant. Neuman teaches, in Column 13, lines 60 – 65, and Column 14, lines 4 – 9, 15 – 19, 53 – 55, and 58 – 59, that "Accelerants that can be used in the practice of the invention to increase the deposition rate of silicon oxide ... can be defined as follows: ... (4) Compounds of ... phosphorous ... having the following structural formulae: $(R')_3P$, ... $(R')_3P=O$, ... $(R')_5P$, ... wherein ... R' ... (are) selected from ... alkoxide(s) having ... preferably 1 to 4 carbon atoms, such as $-OCH_2CH_2CH_3$ ... examples of which compounds include but are not limited to triethylphosphite." $(R')_3P=O$ and $(R')_5P$ are pentavalent, phosphorous (V) compounds that Neuman teaches may be used as accelerants in lieu of triethylphosphite. Therefore, it would have been obvious to one having ordinary skill

in the art at the time the present application was filed to have used the phosphorous (V) compounds disclosed in Neuman instead of triethylphosphite as the accelerant in the process disclosed by Ye with a reasonable expectation of success, as Neuman teaches that all such accelerants are so capable.

9. Regarding Claims 2 and 3, the same analysis holds true. Ye does not teach that a phosphorous (V) ester or that triethylphosphate may be used as accelerants. However, Neuman teaches that just such compounds may be used as accelerants (e.g., $(R')_3P=O$, wherein $R' = -OCH_2CH_3$).

10. Regarding Claim 4, Ye teaches the process of Claim 1, wherein the silane is monosilane (see Table 1 and Claim 7). Regarding Claim 5, Ye teaches that the inert carrier comprises nitrogen. As discussed, regarding Claim 6, Ye teaches that ethylene is the radical scavenger.

11. Claims 7, 8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ye, further in view of Neuman, and further in view of Soubeyrand (United States Patent 5,798,142).

12. Regarding Claim 7, Ye does not teach that the oxygen containing material/source is oxygen gas. However, Soubeyrand teaches that "pure oxygen may be utilized as the precursor component," (Column 5, line 57) in a silica deposition process in which "silane, a radical scavenger gas, oxygen and an inert carrier gas" (Claim 1 of Soubeyrand) are used, and specifically "wherein the radical scavenger gas is ethylene" (Claim 8 of Soubeyrand). Moreover, Soubeyrand teaches, in Column 5, lines 6 – 10, that "the precursors of the present invention also provide a coating having better uniformity and a lower refractive index, are less sensitive to glass temperature, and have a much higher silane conversion efficiency than the silane/ethylene/acetone system." Because Soubeyrand teaches that oxygen is a superior oxygen source for the deposition of silica on glass than other oxygen-containing source gases (i.e., acetone), and also demonstrates that oxygen has been successfully used as the oxygen source gas in a silica deposition process that utilizes a gas mixture further comprising monosilane, ethylene, and an inert carrier gas (nitrogen), it would have been obvious to one having ordinary skill in the art at the time this application was filed to have used oxygen as the oxygen source disclosed in Ye ("gaseous source of combined oxygen," Column 2, lines 48 – 49) to have obtained the advantages stated above.

13. Regarding Claim 8, Ye does not teach the exact combination of ranges of compositions of silane, oxygen, ethylene, and triethylphosphate as disclosed or claimed in the current application. Ye does teach,

in Example 1 (see Table 1), that 1.2% silane, 15.2% oxygen source gas, 22.8% ethylene, and 0.01% triethylphosphite accelerant is one successful such combination. Because it has been held that, where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), see also MPEP 2144.05 II-A), and, furthermore, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), see also MPEP 2144.05 II-B), it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the ranges claimed in this application in view of Ye, Soubeyrand, and Neuman, as discussed. (See also MPEP 2144.05 II, which states that, generally, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical.)

14. Regarding Claim 13, Ye does not teach that oxygen and triethylphosphate should be used as oxygen source gas and accelerant, respectively. However, as discussed above, Soubeyrand teaches that oxygen may successfully be used as the oxygen sources gas in a silica deposition process otherwise utilizing monosilane, ethylene, and nitrogen, and Neuman teaches that triethylphosphate may successfully be used as an accelerant in lieu of triethylphosphite. Therefore, it would have been obvious to one of ordinary skill in the art to have used oxygen and triethylphosphate in the silica deposition process disclosed by Ye with a reasonable expectation of success, for the reasons discussed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald D. Lafond whose telephone number is (571) 270-1878. The examiner can normally be reached on M-F 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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MICHAEL B. CLEVELAND
SUPERVISORY PATENT EXAMINER